

Remarks

I. Status of claims

Claims 1-12 were pending.

Claims 21-23 have been added.

The Examiner has indicated that claims 4 and 9 would be allowable if rewritten in independent form.

II. Claim rejections

The Examiner has rejected claims 1, 5-8, 10, and 11 under 35 U.S.C. § 102(b) over Uchiya (U.S. 5,258,608).

The Examiner has rejected claims 1-3, 5-8, and 10-12 under 35 U.S.C. § 103(a) over Uchiya.

A. Independent claim 1

Independent claim 1 recites “forming a color filter array on the bottom antireflection coating” (emphasis added). In this way, at least in some implementations, “the bottom antireflection coating provides a uniform adhesive surface for the color filter array, substantially eliminating lifting of the color filter array resist structures” (page 3, lines 1-3).

The Examiner has asserted that Uchiya teaches “forming an array of color filtering regions on the antireflection layer.” Contrary to the Examiner’s assertion, however, Uchiya clearly teaches that the color filtering regions 11, 15, 19 are formed on the anti-blending layer 10 (see, e.g., FIG. 1D; also see col. 3, lines 47-48: “A red dyeing layer 11 is deposited on the anti-blending layer 10”).

For at least this reason, the Examiner’s rejection of independent claim 1 under 35 U.S.C. § 102(b) over Uchiya should be withdrawn.

The Examiner has not provided any rationale whatsoever for his rejection of independent claim 1 under 35 U.S.C. § 103(a). Nevertheless, independent claim 1 would not have been obvious over Uchiya because neither Uchiya’s teachings nor the knowledge

generally available would have motivated one of ordinary skill in the art at the time the invention was made to modify Uchiya to form the color filter array on the antireflection layers 5, 6. In particular, Uchiya teaches that (col. 3, lines 42-46):

As shown in FIG. 1C, a color anti-blending layer 10 of transparent high molecular resin, such as polymethyl methacrylic acid or polyglycidyl methacrylic acid, is deposited entirely on the substrate so that the holes 9 are refilled and the layers 4, 5 are buried under the anti-blending layer.

Thus, the anti-blending layer 10 fills the holes 9 between the patterned light-shielding layer and the overlying antireflection layers 5, 6 to provide a planarized surface on which the color filter array is formed. If the color filter array were formed on the antireflection layers 5, 6, the non-planar surface presented by the patterned light-shielding layer and the overlying antireflection layers 5,6 would likely degrade the quality of the color filtering regions 11, 15, 19 of the color filter array. Moreover, there is nothing in Uchiya nor in the knowledge generally available that would have given one of ordinary skill in the art at the time the invention was made a reasonable expectation that eliminating the anti-blending layer 10 and forming the color filter array on the antireflection layers 5, 6 would be successful.

For at least these reasons, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a) over Uchiya should be withdrawn.

B. Claims 2, 3, 5-8, and 10-12

Each of claims 2, 3, 5-8, and 10-12 incorporates the features of independent claim 1 and therefore is patentable over Uchiya for at least the same reasons explained above.

C. New claim 21

Claim 21 incorporates the features of independent claim 1 and therefore is patentable over Uchiya for at least the reasons explained above. Claim 21 also is patentable over Uchiya for the following additional reasons.

Claim 21 recites that the color filter array comprises an array of color filters each disposed over a respective light sensing element such that light travels from each color filter to a respective light sensing element through a respective light transmission path substantially

transmissive to radiation in a visible wavelength range. Claim 21 also recites that after the removing, remaining portions of the antireflection coating are disposed in each light transmission path between the color filter array and the active image sensing device structure.

In Uchiya's imaging device, the aluminum layers 4 are not substantially transmissive to radiation in a visible wavelength range (see, e.g., col. 4, lines 11-15, and FIG. 4). Accordingly, in Uchiya's imaging device, the only light transmission paths that are located between the color filters 11, 15, 19 and the optoelectrical conversion regions 2 and that are substantially transmissive to radiation in a visible wavelength range, are the light transmission paths defined between adjacent aluminum layers 4. Since, the antireflection layers 5, 6 in Uchiya's imaging device exist only on top of the aluminum layers 4, these antireflection layers 5, 6 are *not* "disposed in each light transmission path between the color filter array and the active image sensing device structure," as recited in claim 21.

D. New claim 22

Claim 22 incorporates the features of independent claim 1 and therefore is patentable over Uchiya for at least the reasons explained above. Claim 22 also is patentable over Uchiya for the following additional reasons.

Claim 22 recites that "after the removing, the bottom antireflection coating is present only in regions directly under color filter array material." As shown clearly in FIG. 1E, in Uchiya's solid state imaging device, the antireflection layers 5, 6 are present in regions that are not directly under color filter array material.

E. New claim 23

Claim 23 incorporates the features of independent claim 1 and therefore is patentable over Uchiya for at least the reasons explained above. Claim 23 also is patentable over Uchiya for the following additional reasons.

Claim 23 recites that "the bottom antireflection coating has a thickness of about 60 nm." Uchiya teaches that layer 5 has a thickness of 100 nm (col. 2, lines 61 and 62) and that layer 6 has a thickness of 30 nm (col. 2, line 65). Therefore, the combined thickness of layers 5, 6 is 130 nm, which is *not* about 60 nm.

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III. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 50-1078.

Respectfully submitted,

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